

REMARKS

In the Office Action¹, the Examiner objected to the specification because the title is allegedly not descriptive; rejected claims 1-14 and 21 under 35 U.S.C. §101; and rejected claims 1-21 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application No. 2005/0065951 to Liston et al. (“Liston”) in view of U.S. Patent No. 6,360,223 to Ng et al. (“Ng”).

Applicants have amended the title and have amended claims 1, 15, and 21. Claims 1-21 remain pending.

Applicants’ representatives thank Examiner Morrison for the time and courtesy in extending Applicants’ representatives an interview to discuss this pending application. During the interview, Applicants’ representatives presented proposed amendments, consistent with the present amendments, to independent claims 1 and 21 to overcome the §101 rejection. Examiner Morrison agreed that the amendments overcome the §101 rejection. Examiner Morrison also stated that independent claim 15 must include “a processor.” Applicants have amended claim 15 to recite “a processor.”

I. Regarding the objection to the specification

Though Applicants disagree with the Examiner’s objection to the title, Applicants have amended the title to read: “Method, Apparatus, and Computer Program Product for Implementing Techniques for Visualizing Data Dependencies.” Applicants submit

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

that the amended title is descriptive and request that the Examiner withdraw the objection.

II. Regarding the rejection of claims 1-14 and 21 under 35 U.S.C. §101

The Examiner rejected claims 1-14 and 21 under 35 U.S.C. §101 because “these claims clearly recite an ‘information carrier’, which may comprise ‘propagated signal’” (Office Action at page 2). Applicants respectfully disagree.

“When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.” See M.P.E.P. § 2106 (IV) p. 2100-12. A claim to a data structure stored on a computer readable medium that increases computer efficiency has been held statutory. *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994). Furthermore, a claim to a computer having a specific data structure stored in memory has been held statutory as a product-by-process claim. *In re Warmerdam*, 33 F.3d 1354, 1360-1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994).

However, to expedite prosecution, Applicants have amended claims 1 and 21 to recite a “computer program product tangibly embedded in a computer-readable storage medium.” Claims 1-14 and 21 thus do not cover a propagated signal. Rather, these claims positively recite a specific data structure that is tangibly embedded in a computer-readable storage medium. Such definition cannot cover a propagated signal. Therefore, claims 1-14 and 21 fall squarely within the categories of patentable subject

matter, and Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-14 and 21 under 35 U.S.C. §101.

III. Regarding the rejection of claims 1-21 under 35 U.S.C. § 103(a) as being unpatentable over *Liston* in view of *Ng*

Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1-21 because a *prima facie* case of obviousness has not been established with respect to these claims.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). M.P.E.P. § 2142, 8th Ed., Rev. 2 (May 2004), p. 2100-128.

A *prima facie* case of obviousness has not been established because, among other things, neither *Liston* nor *Ng*, taken alone or in combination, teach or suggest each and every element recited by Applicants' claims.

Claim 1 recites a computer program product, tangibly embodied in an information carrier, comprising instructions operable to cause data processing apparatus to:

receive a specification of one or more controllers, each controller having at least one associated data structure of data elements, each data structure being associated with exactly one controller, and one or more data mappings, each data mapping specifying a data source for a data element, each data mapping being a context mapping or a model mapping, each context mapping binding the data element to another data element, each model mapping specifying a model and a supply function,

the supply function being operable to derive a value of the data element from the model;

derive one or more data dependency relationships from the data mappings, each data dependency relationship being directed from a controller to one other controller or to one model, one data dependency relationship being derived whenever there is at least one data mapping between the controller and the other controller or the model . . .

(emphasis added). *Liston* does not teach or suggest at least these elements.

Liston discloses “computer-implemented systems, methods, and tools for dynamically synchronizing and coordinating views and controls of diverse, multidisciplinary project data” (paragraph 0012). The Examiner cites paragraph 0009, of *Liston*, asserting that this paragraph teaches the claimed, “receive a specification of one or more controllers, each controller having at least one associated data structure of data elements, each data structure being associated with exactly one controller, and one or more data mappings, each data mapping specifying a data source for a data element, each data mapping being a context mapping or a model mapping, each context mapping binding the data element to another data element, each model mapping specifying a model and a supply function, the supply function being operable to derive a value of the data element from the model” (Office Action at page 3). This is not correct.

Paragraph 0009 of *Liston* discloses a prior art Model-View-Controller (MVC) application architecture. The MVC application architecture comprises applications 110, 120, and 130 (Fig. 1B). Model 111 “represents data and rules, e.g. access and modification, specific to application 110,” “notifies view 112 when it changes and enables view 112 to query model 111 about its state,” and “enables controller 113 to access application functionality” (paragraph 0009). “View 112 defines how model 111 is

shown and forwards user feedback to controller 113” (paragraph 0009). “Controller 113 defines application behavior and handles user interaction” (paragraph 0009).

The Examiner has not detailed which part of the MVC application architecture allegedly corresponds to the claimed “data structure” and “one or more data mappings.” Model 111 cannot be a “data mapping” at least because model 111 does not specify “a data source for a data element.” Model 111 “notifies view 112 when it changes and enables view 112 to query model 111 about its state” (paragraph 0009). Notifying and enabling view 112 does not constitute the claimed “specifying a data source for a data element,” as recited in claim 1.

Model 111 does not map data. Moreover, there is no teaching in *Liston* that model 111 constitutes the claimed “context mapping or a model mapping.” Even assuming, absent any teaching in *Liston*, that the Examiner considers model 111 to be a data mapping, there is no teaching that model 111 is a context mapping that binds “the data element to another data element,” as recited in claim 1. Similarly, there is no teaching that model 111 is a model mapping that specifies “a model and a supply function, the supply function being operable to derive a value of the data element from the model,” as further recited in claim 1. Therefore, model 111 cannot constitute the claimed “data mapping.”

View 112 also cannot constitute the claimed “data mapping.” “View 112 defines how model 111 is shown and forwards user feedback to controller 113” (*Liston*, paragraph 0009). The steps of defining how a model is shown and forwarding user feedback does not constitute mapping data. Moreover, there is no teaching, in *Liston*,

that view 112 is a context mapping or a model mapping. Even assuming, absent any teaching in *Liston*, that view 112 could be considered to be a data mapping, there is no teaching that view 112 is a context mapping that binds “the data element to another data element,” as recited in claim 1. Similarly, there is no teaching that view 112 is a model mapping that specifies “a model and a supply function, the supply function being operable to derive a value of the data element from the model,” as further recited in claim 1. Therefore, view 112 cannot constitute the claimed “data mapping.”

The Examiner cites paragraphs 0009 and 0042 of *Liston*, asserting that these paragraphs teach the claimed, “derive one or more data dependency relationships from the data mappings, each data dependency relationship being directed from a controller to one other controller or to one model, one data dependency relationship being derived whenever there is at least one data mapping between the controller and the other controller or the model” (Office Action at page 4). This is not correct.

As previously stated, paragraph 0009 does not teach the claimed “data mapping.” Therefore, paragraph 0009 cannot constitute deriving “one or more data dependency relationships from the data mappings,” as recited in claim 1. In addition, there is no teaching that controller 113, 123, or 133 interact with each other so as to constitute “each data dependency relationship being directed from a controller to one other controller or to one model,” as recited in claim 1. Paragraph 0009 states that applications 110, 120, and 130 (which include controllers, 113, 123, and 133, respectively) are different applications. Furthermore, Fig. 1B does not depict interaction between applications 110, 120, and 130 or controllers, 113, 123, and 133. Therefore,

there is no teaching, in *Liston*, of “each data dependency relationship being directed from a controller to one other controller or to one model,” as recited in claim 1.

Paragraph 0042 of *Liston* also does not teach the claimed “derive one or more data dependency relationships from the data mappings, each data dependency relationship being directed from a controller to one other controller or to one model, one data dependency relationship being derived whenever there is at least one data mapping between the controller and the other controller or the model.” Paragraph 0042 discloses a CIFE iRoom. This CIFE iRoom does not use the prior art data mapping depicted in Fig. 1B. Moreover, there is no motivation to combine the teachings of Fig. 2 with the teachings of Fig. 1B at least because *Liston* states that “current MVC architecture (shown in Fig. 1B) is unable to identify the existing interrelations between sub-models of different applications” (paragraph 0010). Therefore, Fig. 2 has different structure and functionality and is directed to a different data model.

Fig. 2 depicts a “Shared Project Data Model 200 [that] includes Domain Models 230 and Relation Model 240” (paragraph 0042). However, these models do not constitute a data mapping “being a context mapping or a model mapping” and “context mapping binding the data element to another data element, each model mapping specifying a model and a supply function, the supply function being operable to derive a value of the data element from the model,” as recited in claim 1.

Furthermore, paragraph 0042 of *Liston*, discloses modeling “the relationships necessary to describe this mapping separately from the data themselves.” There is no teaching of “one data dependency relationship being derived whenever there is at least

one data mapping between the controller and the other controller or the model,” as further recited in claim 1.

The Examiner correctly notes that *Liston* “does not explicitly indicate ‘and visualize the data dependency relationships by displaying a link for each of one or more data dependency relationships, each link showing a direction of data dependency’” (Office Action at page 4). However, the Examiner alleges that *Ng* teaches this element of claim 1.

Even assuming this allegation is true, which Applicants do not concede, *Ng* fails to cure the deficiencies of *Liston* discussed above. *Ng* discloses “a user interface to view and enter information relating to mapping rules for use with a mapping tool that maps data between data models according to the rules” (col. 3, lines 12-14). *Ng* does not teach “one or more data mappings, each data mapping specifying a data source for a data element, each data mapping being a context mapping or a model mapping, each context mapping binding the data element to another data element, each model mapping specifying a model and a supply function, the supply function being operable to derive a value of the data element from the model” and “each data dependency relationship being directed from a controller to one other controller or to one model, one data dependency relationship being derived whenever there is at least one data mapping between the controller and the other controller or the model,” as recited in claim 1.

Accordingly, *Liston* and *Ng* fail to establish a *prima facie* case of obviousness with respect to claim 1, at least because the references fail to teach each and every

Customer No. 22,852
Attorney Docket No.: 09700.0077-00
SAP Reference No. 2003P00458US
Application No.: 10/734,735

element of the claim. Claims 2-14 depend from claim 1 and are thus also allowable for at least the same reasons as claim 1.

Independent claims 15, 18, and 21, though of different scope from claim 1, recite limitations similar to those set forth above with respect to claim 1. Claims 15, 18, and 21 are therefore allowable for at least the reasons presented above. Claims 16-17 and 19-20 are also allowable at least due to their dependence from claims 15 and 18 respectively.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: August 30, 2006